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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/044,604	01/11/2002	James Fraivillig	07009.011002	1887

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EXAMINER
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TRINH, MINH N

ART UNIT	PAPER NUMBER
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3729

DATE MAILED: 01/09/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

<p align="center"><b>Office Action Summary</b></p>	<p>Application No.</p> <p align="center">10/044,604</p>	<p>Applicant(s)</p> <p align="center">FRAIVILLIG, JAMES</p>	
	<p>Examiner</p> <p align="center">Minh Trinh</p>	<p>Art Unit</p> <p align="center">3729</p>	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 24 October 2005.
- 2a) ☒ This action is **FINAL**.                      2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-15 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-15 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All    b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- |   |   |
|---|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892)                        | 4) <input type="checkbox"/> Interview Summary (PTO-413)                     |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)    | Paper No(s)/Mail Date. _____  |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| Paper No(s)/Mail Date _____   | 6) <input type="checkbox"/> Other: _____                                    |

### **DETAILED ACTION**

1. The reply filed on 10/24/05 has been carefully reviewed and made of record.
2. The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.
3. Claims 1-15 are rejected under 35 U.S.C. 103(a) as being unpatentable over Fraivillig (6,015,607) in view of Hoffmeyer (5,757,073).

Fraivillig discloses a method for manufacturing a PCB bonded to a heat sink comprising: a first step of: adhering a conductive layer to a first surface of a bond film using a first adhesive layer to produce a circuit substrate (as discussed in the abstract, or discussion at col. 5-6), wherein the adhering is achieved by partially activating the first adhesive layer such that the conductive layer is tack bonded to the bond film, processing the circuit substrate to produce a flexible printed circuit (see Fig. 3, col. 5, lines 60-67, col. 6, lines 1-26). Hoffmeyer discloses a second step where the laminating the heat sink 20 to a second surface of the bonded film 28 of the flexible printed circuit 12 using a second adhesive layer 26 (see Fig. 1, and the discussion at col. 5, lines 48-52). It is noted that the reference 12 is described as flexible circuit (see col. 5, line 40-42). Therefore, it would have been obvious to one having ordinary skill in the art at the time of the invention was made to employ the teaching of Hoffmeyer on the method invention of Fraivillig in order to facilitate the fabrication process including mechanical attaching of heat sink to the flexible substrate by adhesive bonding or the like. It is also

noted that a related Fig. 6 of Hoffmeyer shows a heat sink 70 being bonded to a second surface of bond film 74 by means of adhesive, etc.

As applied to claims 2-3, noting in light of Fraivillig's discussion at col. 5-6, which discloses the temperature versus pressure range as recited in these claims.

As applied to claims 4-5, it would have been an obvious matter of design choice to choose any desired materials for the first and second adhesive layer since applicant has not disclosed such different composition of the first and the second adhesive layer are critical distinguishing features and it appears that the invention would perform equally well with the adhesive compositions as provided by the prior art reference (see Fraivillig's Fig.3, reference 82).

As applied to claims 6-7, Fraivillig discloses the limitations of these claims (see related embodiment of Figs. 5-7, and the discussion at col. 6, lines 56-67, col. 7, lines 1-33). Regarding the coating of an antioxidant layer this concept is described at col. 6, lines 10-16.

Limitations of claims 8-12 are also met by Fraivillig (as discussed in the abstract and shown in Figs. 3-4, etc.,).

As applied to claims 13-15, regarding the applying of the second adhesive layer on the second surface of the bond film. It would have been an obvious matter of design choice to apply the second adhesive layer on the second surface of the bond film prior to the adhering the conductive layer to the first surface of the bond film and/or coat second adhesive layer on the second surface of the bond film prior to the laminating the heat sink to the second surface of the bond film, etc., since applicant has not disclosed

such sequentially order are critical and patentable distinguishing features and it appears that the invention would perform equally well with the teaching as provided by the prior art reference (see Fraivillig's discussion at cols. 5-6). Furthermore, regarding the limitations of claims 13-15, it would have been obvious to one having ordinary skill in the art at the time the invention was made to apply the second adhesive layer on the second surface of the bond film prior to the adhering the conductive layer to the first surface of the bond film and/or that as recited in claims 14-15, since it has been held that the provision of adjustability, where needed, involves only routine skill in the art. *In re Stevens*, 101 USPQ 284 (CCPA 1954).

#### ***Response to Arguments***

4. Applicant's arguments filed 10/24/05 have been fully considered but they are not persuasive for the following reasons:

Applicant argues that the prior art fails to teach the partially activated to form a tack bond as recited in the present application's claims (see page 5, paragraphs 1-2). The examiner disagrees, because the Fraivillig '607 as relied upon does disclose the adhesive material as polyetherimide and siloxane polyetherimide which appears to be comparable to that as used in the present application. Regarding the partially cure or partially activating the first adhesive layer such that the conductive layer is tack bonded to the bond film. It is inherent that for the adhesive to be curing it have to be in process of partially activate or cure until it is matured and fully cured. Because in order for the bonding process to be effective the adhesive layer have to be partially activated first

and then cured. Therefore, the limitation of “the partially activating the first adhesive layer such that the conductive layer is tack bonded to the film” is met by Fraivillig.

Further, applicant further argues on page 5, of the “Remarks” that the prior art single step process versus the two steps bonding process of the present invention. The examiner disagrees, since it is known to the art to simplify the bonding process by providing an adhesive on the bond film prior to the bonding step in order to facilitate the process. Further, it would have been obvious to one having ordinary skill in the art at the time the invention was made to employ the two steps bonding process versus one step by the Hoffmeyer 's teaching of laminating the heat sink 20 to a second surface of the bonded film 28 of the flexible printed circuit 12 using a second adhesive layer 26 (see Fig. 1, and the discussion at col. 5, lines 48-52) as a second bonding step as so to facilitate the fabrication process. See related Fig. 6 of Hoffmeyer shows a heat sink 70 bonded to a second surface of bond film 74 by means of adhesive.

In response to applicant's argument that there is no suggestion to combine the references, the examiner recognizes that obviousness can only be established by combining or modifying the teachings of the prior art to produce the claimed invention where there is some teaching, suggestion, or motivation to do so found either in the references themselves or in the knowledge generally available to one of ordinary skill in the art. See *In re Fine*, 837 F.2d 1071, 5 USPQ2d 1596 (Fed. Cir. 1988) and *In re Jones*, 958 F.2d 347, 21 USPQ2d 1941 (Fed. Cir. 1992). In this case, the modifying the prior art teachings would result the claimed invention because both inventions directed to the same field of invention.

In light of the above discussion, Applicant's arguments with respect to Fraivillig in view of Hoffmeyer are moot.

### **Interviews After Final**

5. Applicant notes that an interview after a final rejection will not be granted unless the intended purpose and content of the interview is presented briefly, in writing (the agenda of the interview must be in writing). Such an interview may be granted if the examiner is convinced that disposal or clarification for appeal may be accomplished with only nominal further consideration. Interviews merely to restate arguments of record or to discuss new limitations which would require more than nominal reconsideration or new search will be denied. See MPEP 714.13 and 713.09.

### **Conclusion**

6. It is noted that any amendment made to the disclosure and the claims. Applicant requires to point out the support provide numeral references to the claimed limitations as well as support in the disclosure (i.e., page and line numbers and reference number associated with from the drawings) for better clarity (See 37CFR 1.111 and section 2163.06 of the MPEP).

7. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within

Art Unit: 3729

TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Minh Trinh whose telephone number is (703) 305-2887. The examiner can normally be reached on Monday -Thursday 8:00 am to 4:30 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Peter Vo can be reached on (703) 308-1789. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

mt  
1/5/06

  
MINH TRINH  
PRIMARY EXAMINER